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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/587,722	06/05/2000	Joerg Winkler	A72399US	7906

7590 01/15/2004

EXAMINER
FERRIS, DERRICK W

ART UNIT	PAPER NUMBER
2663	8

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DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/587,722	WINKLER ET AL.	
	Examiner	Art Unit	
	Derrick W. Ferris	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. **Claims 1-34** as amended are still in consideration for this application. Applicant has amended claims **20-26**.

2. Examiner **withdraws** the specification objection(s) for Office action filed 09/18/03. Examiner thanks applicant for making the appropriate correction.

3. Examiner **withdraws** the drawing objection(s) for Office action filed 09/18/03. Examiner thanks applicant for making the appropriate correction.

4. Examiner does **not withdraw** the obviousness rejection to *Lincoln et al.* and *Lincoln et al.* in view of *Daniel et al.* for Office action filed 09/18/03. In addressing applicant's arguments in the response filed 12/22/03, at issue are the steps of determining and preventing an overflow. In particular, applicant argues that *Lincoln et al.* does not teach a step of "*determining whether an ATM cell in said client is ready to be transferred over said bus storage device within said host*". Examiner respectfully disagrees. Not recited in the claim is how the step is performed. As such, examiner assumes a reasonable but broad interpretation of the claimed subject matter. Hence see at least column 10 lines 28-65. In particular, an ATM cell is transferred when a buffer is not full (e.g., see step 342 in figure 9). With respect to a step of preventing an overflow, applicant argues that *Lincoln et al.* does not teach the further limitation of calculating. Examiner respectfully disagrees. See e.g., column 10, lines 28-65. In particular, *Lincoln et al.* at column 10, lines 54-56 discloses that there are two indications of determining whether a status queue 123 is full (i.e., whether buffer overflow occurs). In particular a WRITE pointer 164 is incremented by a binary 1 which is compared with the last known host position to determine if a status queue

132 is full in reference to figure 9 steps 342 and 348 (e.g., see column 10, lines 57-65). Setting the full bit uses the READ_UP and WRITE pointers (e.g., see step 346). Thus a full bit is "calculated" using a reasonable but broad interpretation of the claim recitation with respect to a first available cell space (i.e., how a first available cell space is calculated is not recited by applicant). Applicant claims a step of calculating as a function of (1) a write value, (2) a read value image, and (3) a size value of said storage device. Mentioned previously a write value is WRITE and a read value image is READ_UP. Implicitly taught by the reference is a size value since the payload for an ATM cell is fixed (i.e., 48 bytes). In other words, examiner assumes a reasonable but broad interpretation of "size value of said storage device" to include a singular of cell units (i.e., it is not clearly recited in the claims that size of a storage device reflects (1) a host ring buffer 70 and (2) more than one cell unit in reference to middle of page 9 of applicant's specification). In addition, one could also argue that a region length is also used indirectly in "calculating" an overflow as shown in figures 3 and 4 (e.g., see column 5). Thus all elements are taught for a function. Finally, one skilled in the art would be motivated to combine the teachings of *Lincoln et al.* with *Daniel et al.* since both references relate to computer memories in general, and more specifically relate to transferring information over a PCI bus.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1-4, 8, 10-12 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,075,790 to *Lincoln et al.* ("*Lincoln*").

As to **claim 1**, *Lincoln* discloses a system and method of writing a cell payload between a control queue on one side of a system bus and a status queue on the other side of a system bus. In particular, figure 2 shows a host 32 sub-system, a PCI bus 130, and a SAR sub-system 29. Using figure 2 as a reference, *Lincoln* further discloses a read pointer (e.g., READ 148, 160), a read image pointer (READ_UD 162, 150) (i.e., a read value image), and a write pointer (WRITE 164, 152) (i.e., a write value). A step of determining is at least taught as step 200 in figure 7 and step 340 in figure 9 using a reasonable but broad interpretation. In addition to the step of determining, in reference to applicant's specification on page 1, lines 17-23 concerning an empty/full flag taught by the prior art for limiting traffic over a PCI bus, examiner notes that *Lincoln* uses an internal full bit setting (see steps 342 and 348), however, it is unclear from the reference where the full bit is set (i.e., whether the bit is set at the host 32 or the SAR 29) [column 10, lines 28-67]. *Lincoln*, however, discloses using the image read and write pointers to determine if a buffer is full in step 346, thus *Lincoln* avoids having to poll for a empty/full flag across the bus (i.e., the comparison is performed locally) eliminating additional traffic over a PCI bus. A step of preventing overflow is at least taught as step 204 in figure 7 or steps 342, 346 in figure 9.

What may not be clear from the reference is using a size value as a function of preventing overflow. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant's invention to use a size value in general for computing

overflow using a reasonable but broad interpretation of "size". One motivation is that a skilled artisan would recognize the size of a buffer is used in determining whether a buffer is full or not. As support, examiner notes that *Lincoln* provides a size of one payload when writing (i.e., size is implicit). With respect to size of the buffer, *Lincoln* also discloses support by capturing the size of the buffer as well (see "region length" field in figures 3 and 4).

As to **claim 2**, a host sub-system 32 is a storage device (see figure 2).

As to **claim 3**, see column 7, lines 40-49.

As to **claim 4**, as the buffers are circular examiner notes a reasonable but broad interpretation of "programmable". Also see free region queue in figure 3.

As to **claim 8**, see column 7, lines 40-67 of *Lincoln*.

As to **claim 10**, see rejection for claim 1.

As to **claim 11**, see figures 5 and 7 of *Lincoln*.

As to **claim 12**, see rejection for claim 3.

As to **claim 16**, see rejection for claim 7.

7. **Claims 5-7, 9, 13-15, 17, 18 and 19-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,075,790 to *Lincoln et al.* ("*Lincoln*") in view of U.S. Patent No. 6,115,761 to *Daniel et al.* ("*Daniel*").

As to **claims 5-6**, *Lincoln* is silent or deficient to using a "write value image" for buffer underflow. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant's invention to use an image of the write pointer in order to avoid underflow. Examiner notes one would be motivated to apply the teachings of overflow to

those of underflow without departing from the spirit/scope of the invention by implicitly teaching a write value image using the teachings of *Lincoln* (i.e., to use the reverse or opposite of a read value image). As further motivation, *Daniel* discloses using a copy of a write pointer (i.e., a write image value). *Daniel* also discloses avoiding underflow as well (e.g., column 8, lines 35-58). Thus *Daniel* also provides additional support and motivation for using a write pointer to avoid underflow.

As to **claim 7**, examiner notes it would have been obvious to a skilled artisan prior to applicant's invention to using similar logic in creating a "programmable number" for underflow as taught by overflow. One motivation is that one skilled in the art recognizes that a variable amount of data is stored in a buffer such that the size allocated to each connection is variable (i.e., programmable).

As to **claim 9**, see similar reasoning for claim 8.

As to **claim 13**, see similar reasoning for claim 7.

As to **claims 14-15**, see similar reasoning for claims 5-6.

As to **claim 17**, see similar reasoning for claim 7.

As to **claim 18**, see similar reasoning for claim 8.

As to **claim 19**, see combined rejections for claims 1 and 5.

As to **claim 20**, see the rejection for claim 4.

As to **claim 21**, *Lincoln* teaches the host controlling and initialing the updating (e.g., see figures 5 and 7).

As to **claim 22**, see the rejection for claim 4.

As to **claim 23**, see the rejection for claim 21.

As to **claim 24**, see rejections for claims 8 and 9 respectfully.

As to **claim 25**, see column 8, lines 43-47.

As to **claim 26**, see column 5, lines 64-68.

As to **claim 27**, see combined rejections for claims 1 and 5.

As to **claim 28**, see the rejection for claim 7.

As to **claim 29**, see the rejection for claim 21.

As to **claim 30**, see the rejection for claim 4.

As to **claim 31**, see the rejection for claim 7.

As to **claim 32**, see the rejections for claims 8 and 9 respectfully.

As to **claim 33**, see the rejection for claim 25.

As to **claim 34**, see the rejection for claim 26.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Derrick W. Ferris
Examiner
Art Unit 2663

DWF

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 1/9/04